

AGENDA ITEM NO. 8b

May 8, 2003

TO: Local Agency Formation Commission

FROM: Dan Schwarz, Executive Officer
Keene Simonds, Analyst

SUBJECT: Comprehensive Study of American Canyon: Service Review
Water Service Supplement

At the April 10, 2003 meeting, the Commission asked staff to provide additional information regarding American Canyon's current and future water supply. Specifically, staff was asked to provide context to draft determination 5.3 of the *Comprehensive Study of American Canyon: Service Review Report*, which states:

Through its contractual agreements, the City of American Canyon imports a supply of water adequate to serve the existing and developing south county region. There has not been a period of extended drought subsequent to the growth in the City; a significant measure of the capability of the American Canyon water system will be its performance under such drought conditions. Any service review conducted subsequent to a drought should carefully evaluate this performance.

Since American Canyon relies solely on imported water entitlements, the City operates without the benefit of historical production records from a local water source (i.e., reservoir) during varying hydrological periods. As a result, the service review's analysis of the City's water system during a drought is based solely on projections, not historical figures. To ensure that the service review captures the realities of entitlements, it is important that the review clearly differentiate between contracted entitlements and actual deliveries. To this end, staff's analysis includes a detailed review of the City's contracted water supply in relationship to projected water demands paired with projected cutbacks in deliveries.

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Daniel Schwarz
Executive Officer

WATER SUPPLY

American Canyon's water supply is based on contracted entitlements drawn from two outside sources: the State Water Project (SWP) and the City of Vallejo. Water drawn from the SWP is secured through a 1966 agreement between the American Canyon County Water District (ACCWD) and the Napa County Flood Control and Water Conservation District. This agreement provides American Canyon (as successor agency to ACCWD) with an annual entitlement of water generated from the SWP through 2035. The entitlement is gradually increased until a maximum annual entitlement of 5,200 acre-feet is reached in 2015.

American Canyon's water supply drawn from Vallejo is secured through a 1996 agreement. This agreement provides American Canyon with an annual entitlement from Vallejo's potable supply until the agreement is mutually terminated. Although Vallejo receives SWP water, the majority of its potable water supply made available to American Canyon is drawn from Lake Berryessa, Lake Frey, and Lake Madigan. The agreement limits American Canyon to no more than 1.0 million gallons per day, with monthly and annual capacities of 57.14 acre-feet and 628.6 acre-feet respectively.¹

American Canyon – Available Water Supply (acre-feet)			
Year	State Water Project	City of Vallejo	Total
2003	4,500	628.6	5,128.6
2004	4,600	628.6	5,228.6
2005	4,700	628.6	5,328.6
2006	4,750	628.6	5,378.6
2007	4,800	628.6	5,428.6
2008	4,850	628.6	5,478.6
2009	4,900	628.6	5,528.6
2010	4,950	628.6	5,578.6
2011	5,000	628.6	5,628.6
2012	5,050	628.6	5,678.6
2013	5,100	628.6	5,728.6
2014	5,150	628.6	5,778.6
2015	5,200	628.6	5,828.6*

- * Annual entitlements continue at the 2015 level through 2035 when all SWP contracts are due to expire.

¹ American Canyon's water supply agreement with Vallejo enables the City to increase its annual entitlement to 6.25 million gallons per day, resulting in monthly and annual capacities of 356.8 acre-feet and 3,928.7 acre-feet respectively.

WATER SUPPLY – PAST REDUCTIONS

American Canyon relies solely on imported water supplies to meet system demands; there are no surface water reservoirs or developed groundwater sources in American Canyon. As a result, American Canyon's water supply is subject to cutbacks caused by external factors. These factors include statewide precipitation rates, snow pack levels, and capacity restrictions caused by the implementation of federal and state water quality objectives for the Sacramento Bay Delta.

American Canyon's principal water supply is generated from the SWP. The Department of Water Resources (DWR), which administers the SWP, oversees an allocation process that begins at the start of each water year (October). By October 1, SWP contractors are required to submit an allocation request to DWR for the amount of water desired for the upcoming water year.² This amount, however, cannot exceed the maximum entitlement scheduled for that water year (as defined in each contractor's water supply agreement). After receiving each contractor's allocation request, DWR uses current and projected storage information to establish an initial allocation assignment for all contractors. During this process, conditions at Lake Oroville in Butte County, and to a lesser extent, the San Luis Reservoir in Merced County, play a central role in determining SWP's current water supply conditions. Following the release of an initial allocation assignment in December, DWR performs monthly evaluations of its storage facilities and snow pack levels in the Sierra-Nevada Mountains to determine if changes are warranted. Over the past five years, DWR has issued the following delivery assignments to all of its SWP contractors:

Department of Water Resources: State Water Project Allocations		
Year	Initial Assignment	Final Assignment
1998	40%	100%
1999	55%	100%
2000	50%	90%
2001	40%	39%*
2002	20%	70%
2003	20%	**

- * DWR classifies the 2001 water year as a "dry year" due to unusually dry conditions. To alleviate system demands, DWR implemented a dry year water purchase program resulting in the purchase of 138,800 acre-feet of non-project water from willing agricultural sellers. Non-project water secured through this program was then provided to participating SWP contractors in addition to their regular entitlements. Prior to 2001, California had experienced a six-year period of wet to normal precipitation rates.

² As a planning device, most SWP long-term contractors request their full entitlement.

** As of April 2003, DWR projects deliveries meeting 70% of most SWP contractors contracted entitlement.

WATER SUPPLY – PROJECTED REDUCTIONS

To identify potential cutbacks in future water deliveries, tiered reductions were applied to American Canyon's current entitlement schedule over the next five years (2003-2007). These reductions represent cutbacks of 10%, 20%, 30%, 40%, 50%, and 60% of the City's full contracted entitlement for each year. This amount includes contracted entitlements from both the SWP and the City of Vallejo.³ For the purposes of this analysis, staff identifies a 60% cutback in delivery as an extended drought period. Although yield designations are determined by each service provider based on their own supply-demand analysis, a 60% cutback in SWP deliveries during a six-year drought is projected by DWR for water years 2001-2021.⁴ (The 60% cutback is based on hydrological conditions for a six-year drought as experienced during the 1987-1992 drought paired with projected water demands.)

American Canyon – 2003 Reduction Rate (acre-feet)			
2003 Entitlement	Reduction	Amount	Total
4,500 (SWP) 628.6 (Vallejo) 5,128.6	0%	0	5,128.60
	10%	512.86	4,615.74
	20%	1,025.72	4,102.88
	30%	1,538.58	3,590.02
	40%	2,051.44	3,077.16
	50%	2,564.3	2,564.30
	60%	3,077.16	2,051.44

American Canyon – 2004 Reduction Rate (acre-feet)			
2004 Entitlement	Reduction	Amount	Total
4,600 (SWP) 628.6 (Vallejo) 5,228.6	0%	0	5,228.60
	10%	522.86	4,705.74
	20%	1,045.72	4,182.88
	30%	1,568.58	3,660.02
	40%	2,091.44	3,137.16
	50%	2,614.3	2,614.30
	60%	3,137.16	2,091.44

³ It is important to note that cutbacks in American Canyon's entitlement to Vallejo's potable water supply may not parallel cutbacks in its SWP entitlement. For consistency purposes, staff assumes that the City's total schedule entitlement (SWP and Vallejo) is subject to an equivalent cutback.

⁴ Detailed in DWR's *State Water Project Delivery Reliability Report – Draft (2002)*, the Department uses a computer simulation model using historical precipitation rates along with future land and water use demands to project the reliability of SWP deliveries through 2021.

American Canyon – 2005 Reduction Rate (acre-feet)			
2005 Entitlement	Reduction	Amount	Total
4,700 (SWP) 628.6 (Vallejo) 5,328.6	0%	0	5,328.60
	10%	532.86	4,795.74
	20%	1,065.72	4,262.88
	30%	1,598.58	3,730.02
	40%	2,131.44	3,197.16
	50%	2,664.3	2,664.30
	60%	3,197.16	2,131.44

American Canyon – 2006 Reduction Rate (acre-feet)			
2006 Entitlement	Reduction	Amount	Total
4,750 (SWP) 628.6 (Vallejo) 5,378.6	0%	0	5,378.60
	10%	537.86	4,840.74
	20%	1,075.72	4,302.88
	30%	1,613.58	3,765.02
	40%	2,151.44	3,227.16
	50%	2,689.3	2,689.30
	60%	3,227.16	2,151.44

American Canyon – 2007 Reduction Rate (acre-feet)			
2007 Entitlement	Reduction	Amount	Total
4,800 (SWP) 628.6 (Vallejo) 5,428.6	0%	0	5,428.60
	10%	542.86	4,885.74
	20%	1,085.72	4,342.88
	30%	1,628.58	3,800.02
	40%	2,171.44	3,257.16
	50%	2,714.3	2,714.30
	60%	3,257.16	2,171.44

CURRENT WATER DEMAND

In 2002, American Canyon delivered approximately 922,948,800 gallons of potable water, resulting in a daily average of 2,528,627 gallons. The City's maximum day water demand was 4.75 million gallons. American Canyon currently provides water service to approximately 3,722 connections.

American Canyon – 2002 Water Demand	
Annual Water Demand:	922,948,800 gallons; or 2,832 acre-feet
Average Daily Water Demand:	2,528,627 gallons; or 7.76 acre-feet
Maximum Day Water Demand:	4.75 million gallons; or 14.58 acre-feet
Water Connections:	3,722 **
Population Served:	12,283 **

* Title 22 of the California Code of Regulations requires that sufficient water be available from the water sources and distribution reservoirs to adequately and dependably meet the requirements of all users under maximum demand conditions.

** Calculated in accordance with Title 22 of the California Code of Regulations, Government Code §64412.2

PROJECTED WATER DEMAND

In 2003, American Canyon issued its *Water System Master Plan (2003)*. The plan was conducted by an outside consultant⁵ and projected water demands for American Canyon under two planning periods: 2006 and buildout. Demands were determined by applying established water use factors (average gallons used per day) for each customer type according to land use projections for each planning period.⁶ The plan estimated American Canyon's annual water demand during these planning periods to be 4,679.3 acre-feet and 6,223.25 acre-feet respectively.

American Canyon – Projected Water Demand (acre-feet)		
Year	Average Day Demand	Annual Demand
2006	12.82 (4.176 mgd)	4,679.30
Buildout	17.05 (5.555 mgd)	6,223.25

CONCLUSION

Using land use projections identified in American Canyon's *Water System Master Plan (2003)*, the City is capable of meeting future water system demands under normal conditions through 2006. Under current conditions, American Canyon faces a water deficit in 2006 if cutbacks exceed 10% of its full entitlement. Considering that over the

⁵ HydroScience Engineers, Inc.

⁶ Land use projections determined using planning components identified in American Canyon's General Plan.

past five years SWP deliveries have met an average of 79.8% of most SWP contractors' contracted entitlements, it appears probable that American Canyon's water supply will require augmentation to meet projected demands.

Although American Canyon's current entitlement schedule indicates a water deficit in 2006 if cutbacks exceed 10%, the City has the right to increase its annual entitlement with Vallejo. Specifically, American Canyon has the right to increase its current maximum day capacity of 1.0 million gallons up to 6.25 million gallons. If pursued, the maximum day capacity of 6.25 million gallons provides American Canyon with an annual entitlement from Vallejo's water supply of 3,928.7 acre-feet. Accordingly, if American Canyon purchases the additional 5.25 million gallons of maximum day capacity from Vallejo, the City will have an adequate water supply to meet projected system demands in 2006 unless cutbacks exceed 45% of its full entitlement. Moreover, the City will have an adequate water supply to meet projected system demands under buildout conditions unless cutbacks exceed 30%. Using delivery projections established by DWR, the probability of the City receiving the minimum amount of actual entitlements needed to meet projected water demands in 2006 and under buildout is approximately 80% and 70% respectively.⁷

American Canyon – 2006 Reduction Rate (acre-feet) <i>Based on the purchase of 6.25 mgd capacity from the City of Vallejo</i>			
2006 Entitlement	Reduction	Amount	Total
4,750 (SWP)	0%	0	8,678.75
3,928.75 (Vallejo)	10%	867.875	7,810.875
8,678.75	20%	1,735.75	6,943
	30%	2,603.625	6,075.125
	40%	3,471.5	5,207.25
	50%	4,339.375	4,339.375
	60%	5,207.25	3,471.5

American Canyon – Buildout Reduction Rate (acre-feet) <i>Based on the purchase of 6.25 mgd capacity from the City of Vallejo</i>			
Buildout Entitlement	Reduction	Amount	Total
5,200 (SWP)	0%	0	9,128.75
3,928.75 (Vallejo)	10%	912.875	8,215.875
9,128.75	20%	1,825.75	7,303
	30%	2,738.625	6,390.125
	40%	3,651.5	5,477.25
	50%	4,564.375	4,564.375
	60%	5,477.25	3,651.25

⁷ DWR's delivery projections are based on a computer simulation model using historical precipitation records and projected land and water use demands under various hydrologic conditions through 2021.

In years when delivery cutbacks exceed the identified minimum thresholds, American Canyon's water supply will require supplemental water to abate future deficits. Options available to the City to counteract water shortages include participating in provisional water supply programs facilitated by DWR and open market water purchases. Two prominent provisional water supply programs facilitated by DWR and available to all public agencies include the Department's dry year water purchase program and its drought water bank program. The dry year purchase program was initiated in 2001 and enables interested parties to supplement their existing water supply by entering into provisional water supply agreements with willing sellers (i.e., farmers). The agreements are negotiated by DWR on behalf of interested parties who are responsible for all costs, including cost of water and DWR staff time. To participate, interested parties are encouraged to enter the program no later than March in order to procure an agreement in a timely manner before peak demand periods occur (note: all agreements are subject to the California Environmental Quality Act and 30-day review periods). However, once an agreement with a willing seller has been negotiated by DWR, the interested party is required to purchase the water, regardless of changes in water supply conditions. The drought water bank program is similar to the dry year water purchase program, except that the Governor must declare a water shortage emergency in order for the program to be initiated. Open market water purchases operate on the same premise (willing buyer-willing seller) as the dry year purchase program and drought water bank program, but negotiated directly between buyer and seller.

Staff's analysis of American Canyon's water supply does not take into account the potential impact of the City's reclamation project. The City intends to begin offering reclamation service within the next two years to alleviate demands on its potable water supply by providing contracted users with unrestricted recycled water (tertiary) for irrigation and landscaping uses. The scope of American Canyon's reclamation project was initially developed in 1997 as part of the City's *Wastewater Treatment and Reclamation Project Predesign Report*. The report identified 22 potential reclamation customers, including seven prominent potable water users on the west side of State Highway 29. These customers were identified as Green Island Vineyard, American Canyon Community Park, Northampton Park, Kimberly Park, Donaldson Way School, Napa Junction School, and South Napa Waste Management Authority. The report projected annual recycled water demands for the 22 customers identified as potential reclamation customers within American Canyon's potable water service area at 1,051 acre-feet. Although it is unclear what the ultimate impact reclamation will have on the City's potable water demands, it represents an important tool in abating future water shortages and should be included in future reviews.

Whether the American Canyon water supply is adequate for its current and future needs rests in a belief in the reliability of the overall water delivery system in California. Even in dry years, the statewide system of augmenting water supplies through transfers of excess entitlements and stores from the dry year storage bank should allow American Canyon to meet its needs. What remains unknown is the cost of these transactions and the impact they would have on the rates paid by customers.

RECOMMENDATION

It is recommended for the Commission to take the following action:

- 1) Direct staff with respect to any additional information the Commission desires concerning the American Canyon water supply in preparation for making determinations in conjunction with the American Canyon Service Review.
- 2) Receive and file this report.

Respectfully submitted,

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Analyst